REMARKS

The Office Action dated January 26, 2007 has been received and carefully studied.

The Examiner rejects claims 18-20 and 24-26 under 35 U.S.C. §102(b) as being anticipated by J.B. Christensen et al., *Corbienes and Dioxapyrenes-New Weitz-type Donors*, Synthetic Metals (41) 1991, and claims 18 and 20-24 under 35 U.S.C. §102(b) as being anticipated by Tokita et al., *Molecular Design and Synthesis of Novel Analogues of Benzodixanthene and Anthradichromene.* The Examiner states that Christensen discloses corbiene and 1,6-dioxypyrene compounds in the presence of a sulfonic acid compound, and that Tokita discloses dixanthene structures that read on the instant compounds.

By the accompanying amendment, claims 1, 3 to 8 and 10 to 24 have been amended, claims 2 and 9 have been cancelled, and claim 27 has been added. Dependent claims also have been amended to correct improper multiple dependencies. Specifically, limitations of claim 2 have been incorporated into claim 1, and the terms "aliphatic hydrocarbon residue which may be substituted", and "an aromatic residue which may be substituted" are respectively specified. Support for the amendment to claim 1 can be found at page 20, line 26 to page 21, line 6, page 22, line

24 to page 23, line 3, page 25, lines 5-8, page 25, line 20 to page 26, line 1, page 26, lines 23-25, and page 93, lines 19-24. Support for the amendment to claim 3 is original claim 2. Support for amended claim 4 can be found at page 26, line 26 to page 27, line 16. Support for amended claim 5 can be found at page 27, lines 3-16. Support for amended claim 6 can be found at page 22, line 24 to page 23, line 3, page 25, lines 5-8, and page 25, lines 25-26. Support for amended claim 7 can be found at page 23, lines 4-22 and page 20, line 26 to page 21, line 6. Support for claim 8 can be found in original claim 7. Support for amended claim 16 can be found at page 78, line 2 from the bottom to page 79, line 4, and at page 86, lines 14-19. Support for claims 18-20 can be found at page 30, line 19 to page 31, line 15, page 31, line 18, page 23, lines 4-22, page 25, lines 5-8, 14-17 and 20-22, page 30, lines 19-27, page 32, lines 1-20, and page 31, line 26 to page 32, line 3. Support for claims 21-23 can be found at page 33, lines 7-23, page 30, line 19 to page 31, line 19, page 23, lines 4-22, page 25, lines 20-22, page 32, lines 4-20, and page 34, lines 4-9. Support for claim 24 can be found at page 35, lines 15-19 and otherwise where support for amended claim 1 is found.

With respect to rejection of claims 18-20 and 24-26 under 35 U.S.C. §102(b) as being anticipated by Christensen et al., the compound of the formula (5) in amended claim 18 has a halogen atom or a phenyl or naphthyl group as at least one of R_{30} to R_{43}, and R_{30} to R_{43} do not contain CH_3 in Christensen et al. Accordingly, claims 18-20 are not anticipated by Christensen et al.

The Examiner states the reference reads on the instant claims when the compounds are R_1=R_2=methyl; R_1 is methyl and R_2 is hydrogen; R_1 is phenyl and R_2 is hydrogen; and R_1 to R_4 of the reference is hydrogen. However, as mentioned above, when the compounds are R_1=R_2=methyl; R_1 is methyl and R_2 is hydrogen; and R_1 to R_4 of the reference is hydrogen, those compounds are outside the scope of present claim 18. When R_1 is phenyl and R_2 is hydrogen in the reference compound, the compound is included the present claim 18. However, such a corbiene compound is not disclosed in Christensen. The corbiene compounds disclosed in Christensen are only (i) R_1 = R_2 = R_3 = R_4 = H; (ii) R_1 = R_2 = R_4 = H, R_3=CH_3; (iii) R_1 = R_3 = H, R_2= R_4=CH_3 and not R_1= phenyl and R_2 = hydrogen as is clear from Table 1 of Christensen.

The compound of the formula (7) in Claim 24 is different from the corbiene in Christensen et al. in view

of the condensed ring containing X4 of the formula (7). Accordingly, claim 24 is not anticipated by Christensen et al.

The starting material of claim 25 is condensed in the presence of a sulfonic acid compound. The Examiner states that Christensen discloses corbienes and 1,6-dioxyapyrene compounds that are in the presence of a sulfonic acid compound. However, in Christensen et al., only the 1,6-dioxapyrene compound was synthesized by ring closure in the presence of CH_3SO_3H and the condensation for obtaining the corbienes was carried out in the presence of polyphosphoric acid and not a sulfonic acid compound. Accordingly, claim 25 is not anticipated by Christensen et al.

Further, Christensen et al. do not suggest the present compound of the formula (5) containing a halogen atom or a phenyl or naphthyl group as at least one of R_{30} to R_{43} in amended claim 18 in two to four of R_{31}, R_{33}, R_{38}, and R_{40} because, although Christensen et al. disclose 1,6-dioxapyrene substituted with a phenyl group, corbienes and 1,6-dioxapyrene are very different in chemical structure. For example, 1,6-dioxapyrene can be obtained by ring closure of substituted naphthalene. However, corbienes can be obtained by ring closure of substituted anthraquinone. Both ring enclosures are not the same and both compounds

are different in their basic structures. Accordingly, 1,6-dioxapyrene substituted with a phenyl group never suggests corbienes substituted by a phenyl group.

Christensen et al. never suggest that ring closure to obtain corbienes can be carried out in the presence of a sulfonic acid compound.

With respect to the rejection of claims 18 and 20-24 under 35 U.S.C. §102(b) as being anticipated by Tokita et al., the compound of formula (5) in amended claim 18 has a halogen atom or a phenyl or naphthyl group as at least one of R_{30} to R_{43}, and in Tokita et al., the compound 1, 3, 1d, 1e, 11,1e', 1e'', 3d, and 3e do not have such a substituent. Accordingly, claim 18 is not anticipated by Tokita et al.

The compound of the formula (7) in Claim 24 has a halogen atom, a C1-C6 alkyl group, or a phenyl, biphenyl, naphthyl, pyridino, thienyl, or furyl group as at least one of R58 to R71. In Tokita et al., the compound 1, 3, 1d, 1e, 11, 1e', 1e'', 3d, and 3e do not have such a substituent. Accordingly, claim 24 is not anticipated by Tokita et al.

Further, Tokita et al. do not suggest the present compound of the formula (5) containing a halogen atom or a

phenyl or naphthyl group as at least one of R_{30} to R_{43} in amended claim 18 and the present compound of the formula (7) containing a halogen atom, a C1-C6 alkyl group, or a phenyl, biphenyl, naphthyl, pyridino, thienyl, or furyl group as at least one of R_{58} to R_{71}. Tokita et al. only show an N-CH_3 substituent compound as 1e'' and an N-phenyl substituent compound as 3d or 3e.

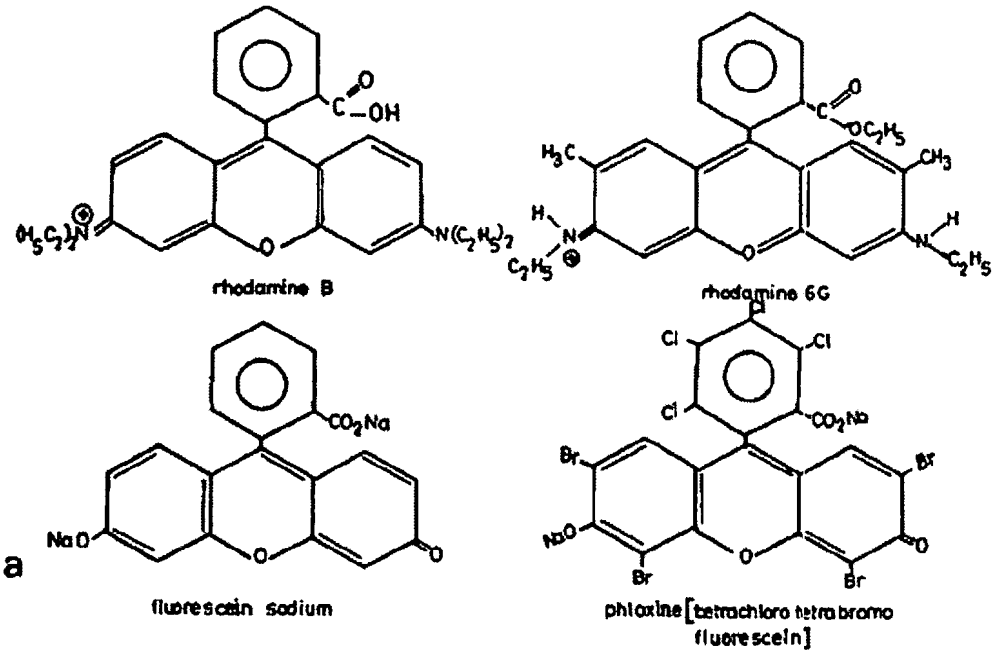
The Examiner also rejects claims 1-17 under 35 U.S.C. §103(a) as being unpatentable over Kobayashi, U.S. Patent No. 6,995,893 in view of Christensen et al. The Examiner states that Kobayashi discloses an electro-optical device used as a display for mobile phones, personal computers and televisions, comprising a substrate, an anode and cathode with a light emitting layer and hole transporting layer disposed therebetween, wherein the light emitting layer can comprise low molecular weight luminous materials such as xanthene-based dyes. The Examiner admits that Kobayashi does not disclose the specific xanthene based dyes recited in the instant claims, but cites Christensen as disclosing such dyes. The Examiner concludes that it would have been obvious to use the Christensen xanthene based luminescent materials in the device of Kobayashi to have a light emitting device with high luminescence due to the donor properties of the Christensen compounds.

More specifically, the Examiner states that it would have been obvious to one of ordinary skill in the art to use the compounds of Christensen because it is disclosed in column 13, lines 1-20 of Kobayashi that the light emitting layer comprises low molecular weight luminous materials such as xanthene-based dyes, and Christensen discloses corbiene and 1,6-dioxypyrene compounds, and further the compounds of the Christensen reference have donor properties.

Kobayashi et al. only disclose that low molecular weight luminous materials such as xanthene-based dyes can be used for the light emitting layer.

Corbiene compounds of Christensen are only disclosed as one of many donor molecules. A compound having donor properties includes very broad compounds such as Lewis bases which do not relate to luminous materials. Therefore, "donor compound" does not mean luminous materials. Specific donor compounds such as rhodamine derivatives etc. can only be used as luminous materials. Christensen never discloses or suggests that the corbiene compounds can be used as luminous materials. Further, the corbiene compounds are not included in usual xanthene-based dyes known as luminous materials. One of the typical

xanthene-based dyes known as luminous materials is rhodamine derivatives having the following structure;



The rhodamine structure is very different from the corbiene compounds. Accordingly, Kobayashi never suggests that the corbiene compounds of Christensen can be used as luminous materials for the light emitting layer.

The amendment to page 26 of the specification is being made to correct a translation error.

Reconsideration and allowance are respectfully requested in view of the foregoing.

Respectfully submitted,

Kevin S. Lemack
Reg. No. 32,579
176 E. Main Street - Suite 7
Westboro, Massachusetts 01581
TEL: (508) 898-1818